

NOTES ON THE GENUS *CARINARIA*, WITH AN ENUMERATION OF THE SPECIES, AND THE DESCRIPTION OF A NEW FORM.

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OF the genus *Carinaria* only two species are at all generally known. These are the large and highly valued *C. vitrea*, Lam. (*Patella cristata*, Linn.), and the much commoner Mediterranean species *C. Mediterranea*, Desh. (= *C. Lamarckii*, Peron and Lesueur). A third form is figured in the "Thesaurus," *C. Atlantica*, Adams and Reeve, but although it is described as not uncommon in the North Atlantic it is but little known, and has probably never been taken since the voyage of the "Samarang." A mistake has been made in the "Thesaurus" in giving the name *C. Cristata*, Linn., for *C. Mediterranea*, instead of for *C. vitrea*.

ENUMERATION OF THE SPECIES.

1. *CARINARIA CRISTATA*, Linn. (*Patella*). Linnæus Syst. Nat. ed. 12, p. 1260.

= *Argonauta vitrea*, Gmelin. Linn. Syst. Nat. ed. 13, p. 3368.

= *Carinaria vitrea*, Lamarek, Syst. Anim. p. 99.

This is by far the largest species of the genus. Specimens of the shell come occasionally, but very rarely from Amboina. If the animal bears the same proportion to its shell as does that of *C. Lamarckii* it must be something like two feet long.

2. *CARINARIA LAMARCKII*, Peron et Lesueur, Ann. du Mus. vol. xv., p. 69, pl. 3, fig. 15.

= *C. Mediterranea*, Sowerby, Recent et Fossil Shells, pl. 279.

= *C. cymbium*, Woodward, Mem. Moll. p. 200, fig. 105, non *Argonauta cymbium* Lamarek.

= *C. fragilis*, Reeve, Conch. Icon. *Carinaria*, pl. 1, species 1 (non Bory St. Vincent). This is the commonest known species, and is found so far as I know exclusively in the Mediterranean Sea.

3. *CARINARIA ATLANTICA*, Adams and Reeve, Voyage of the "Samarang," Moll. p. 63, pl. 13, fig. 12. The shell of this little species is somewhat like that of *C. Lamarckii*, but shorter and more curved. The animal is very different; the body is extremely narrow and cylindrical, whilst the head seems very distinct, and according to the figure looks like that of a walrus, with the short tentacles for tusks.

4. *CARINARIA AUSTRALIS*, Quoy and Gaimard, Voy. de l'Astrolabe, vol. ii., p. 394, pl. 29, figs. 9-13.

The shell of this species differs very little from that of *C. Lamarckii*. It is said to be more elongated and less elevated, with the back more curved. The animal seems to differ principally in the form of the swimmer, which is quadrilateral instead of rounded.

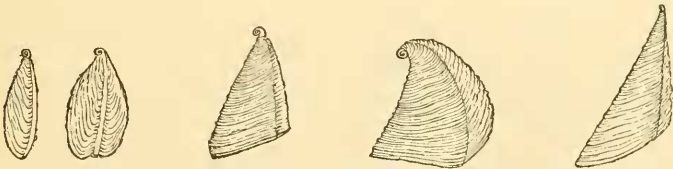
5. *CARINARIA DEPRESSA*, Rang, Bulletin des Sciences Naturelles et de Géologie, vol. xii., p. 243.

Shell very depressed, with a very narrow keel, which is partly immersed in a deep rut, bordered by a rounded elevation on the left hand side. The nucleus consists of three smooth rounded whorls, situated completely at the posterior extremity of the shell. Specimens obtained by Captain Eudel in the Indian Ocean measure from 5 to 10mm. in length and $2\frac{1}{2}$ to 6mm. in width. The animal is described as 115mm. in length.

6. *CARINARIA PUNCTATA*, D'Orbigny, Voyage Amérique Méridionale, vol. v., p. 160, pl. xi., figs. 6-15.

Shell like that of *C. Lamarckii*. I have little doubt that the specimen found in the voyage of the "Challenger," and mentioned by Mr. E. A. Smith (Report of the Heteropoda, p. 37), belongs to this species, the differences in the animal being only such as may be accounted for by the fact of its being preserved in spirits. The body is covered with little white tubercles and dots. D'Orbigny's specimen was taken near Juan Fernandez.

7. *CARINARIA CITHARA*, Benson, Journ. Asiatic Society of Bengal, vol. vi., p. 215, 1835.



Carinaria depressa,
Rang.

Carinaria cithara,
Bens.

Carinaria galea,
Bens.

Carinaria elata,
n.sp.

The shell is very high and pyramidal, slightly inclined in the reverse direction to the ordinary species, so that the keeled side is the shorter. The nucleus, which is much like that of *C. Lamarckii*, is situated at the top and very slightly inclined. The keel is rather broad, crossed with nearly straight plicæ. Height 9-10mm., length at the aperture 6-7mm.

From Benson's description the animal must somewhat resemble that of *C. Atlantica*, very narrow and cylindrical, hyaline, without any very apparent asperities on the surface. Benson reports four specimens (two without spire) of this species taken in the Indian Ocean between Lat. S. $4^{\circ} 30'$ and N. $4^{\circ} 30'$, and Long. E. $87^{\circ} 30'$ and W. $90^{\circ} 30'$.

The Rev. A. H. Cooke kindly sent for my inspection the types of this and the following species (now at Cambridge), from which I was able with certainty to identify specimens of the shells which have come into my hands collected by Captain Eudel in the Indian Ocean in 1869-72.

8. *CARINARIA GALEA*, Benson, Journ. Asiatic Society of Bengal, vol. vi., p. 215, 1835.

The shell of this species is not quite so high in proportion to the length as the preceding; it is elegantly incurved, and the nucleus is

not situated at the summit but curved over on to the posterior side of the shell. The keel is broad and irregularly obliquely plicated.

The animal is described as resembling the preceding, but presenting some differences in the colour of the stomach, mouth, etc. *Habitat*: same as the preceding. Specimens were taken by the late Captain Endel in the Indian and West Pacific Oceans in 1869-72.

9. *CARINARIA ELATA*, Sowerby, n. sp.

Testa hyalina, recta, clatissima, antice leviter inclinata, compressiuscula, regulariter plicata, carina mediocri, plicis subrectis signata. Alt. 16 mm., long. 6 mm., mag. diam. 3 mm.

This shell is even more elevated than *C. cithara*, which it otherwise resembles. The nuclear whorls are unfortunately wanting in the specimen, but they are evidently situated at the summit of the shell.

Two specimens were taken by Captain Endel in the Western Pacific in 1871, of which unfortunately the animals have not been preserved, so that I am only able to describe the shell, which, however, is so remarkable in form that it is worthy of a name.

DOUBTFUL SPECIES.

Carinaria fragilis, Bory de St. Vincent, Voy. Quatres îles d'Afrique, vol. i., p. 142, Atlas pl. vi., fig. 4, 1804.

The description of the shell is so remarkable that one is inclined to doubt its accuracy. Is it possible that some streaks on the animal, or the branchiæ showing through the shell, may have misled the author? The shell is described as having striæ radiating from the summit, no mention being made of the plicæ common to all the known species of the genus; and it is said to have no carina, which of course may have been broken off. The animal as described is very like *C. Lamarekii*, but it might be *C. Australis*, which is more likely from its southern habitat.

Carinaria gaudichaudi, Eydoux and Souleyet, *C. Cornucopia*, Gould.

Having carefully read the descriptions of these by their respective authors, I am fairly satisfied that they are the same as Benson's *C. galea*.